

Appl. No. 10/063,880  
Amdt. dated February 3, 2005  
Reply to Office action of November 16, 2004

**Amendments to the Claims:**

**Listing of Claims:**

Claim 1 (currently amended): Solder pads for improving reliability of a  
5 package, the package comprising a substrate, the solder pads with two  
sizes of diameters comprising:

a plurality of first solder pads arranged in a first circle positioned on  
a surface of the substrate, the first circle being within the scope of the  
surface of the substrate to occupy the entire surface of the substrate  
10 ~~except the corners~~, each of the first solder pads having a first diameter;  
and

~~at least a plurality of second solder [[pad]] pads arranged on the~~  
~~surface of the substrate and out of the first circle, positioned on a corner~~  
~~region of the substrate surface, each of the second solder [[pad]] pads~~  
15 having a second diameter greater than the first diameter to sustain a  
stronger thermal stress and a stronger fatigue strength.

Claim 2 (original): The solder pads of claim 1 wherein the substrate  
comprises a plastic substrate.

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Claim 3 (original): The solder pads of claim 1 wherein the substrate  
comprises a ceramic substrate.

Claim 4 (original): The solder pads of claim 1 wherein the substrate  
25 comprises a printed circuit board (PCB).

Claim 5 (original): The solder pads of claim 1 wherein the substrate

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comprises a chip.

Claim 6 (canceled)

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Claim 7 (currently amended): The solder pads of claim 1, further comprising the plurality of first solder pads arranged in a plurality of circles wherein portions of the first solder pads are arranged in a rectangular array at a center region of the substrate and within the first  
10 circle.

Claim 8 (canceled)

Claim 9 (currently amended): The solder pads of claim 1 wherein the  
15 second solder pads are arranged in corner region comprises the  
circumferences of a plurality of concentric circles on the substrate.

Claim 10 (original): The solder pads of claim 9 wherein the second solder  
pads on each of the concentric circle circumferences are arranged with an  
20 equal interval.

Claim 11 (currently amended): The solder pads of claim 1 wherein the  
corner region comprises the corners of the substrate on an outside portion  
of the first circle is a maximum circle within the scope of the surface of  
25 [[on]] the substrate, and the second solder pads are arranged at the outside  
of the maximum circle.

Claim 12 (currently amended): The solder pads of claim 1 wherein the  
corner region comprises the circumference of a maximum circle on the

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substrate second solder pads are arranged in a second circle, and the second circle is a maximum circle within the scope of the surface of the substrate.

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Claim 13 (currently amended): The solder pads of claim 1 wherein [[the]] a corner region of the substrate comprises at least a grounded solder pad.

10 Claim 14 (currently amended): The solder pads of claim 1 wherein each of the first solder pads and each of the second solder [[pad]] pads comprise a solder bump pad, the solder bump pad connecting to a solder bump and using the solder bump to connect to a chip.

15 Claim 15 (original): The solder pads of claim 14 wherein an underfill layer is filled in a gap between the chip and the substrate.

20 Claim 16 (currently amended): The solder pads of claim 1 wherein each of the first solder pads and each of the second solder [[pad]] pads comprise a solder ball pad, the solder ball pad connecting to a solder ball and using the solder ball to connect to a printed circuit board.

Claim 17 (currently amended): Solder pads with two sizes of diameters comprising:

a substrate;

25 a plurality of first solder bump pads positioned on a first surface of the substrate to occupy the entire first surface of the substrate except the corners, portions of the first solder bump pads being arranged in a first rectangular array at a center region of the first surface, and portions of the first solder bump pads being arranged out of the first rectangular array,

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each of the first solder bump pads having a first diameter;

at least a second solder bump pad positioned on a first ~~predetermined~~  
corner region of the first surface, the second solder bump pad having a  
5 second diameter greater than the first diameter, each of the first solder  
bump pads and the second solder bump pad being connected to a solder  
bump that is connected to a chip;

a plurality of first solder ball pads positioned on a second surface of  
the substrate to occupy the entire second surface of the substrate except  
10 the corners, portions of the first solder ball pads being arranged in a  
second rectangular array at a center region of the second surface, and  
portions of the first solder ball pads being arranged out of the second  
rectangular array, each of the first solder ball pads having a third diameter;  
and

15 at least a second solder ball pad positioned on a second ~~corner~~ corner  
region of the second surface, the second solder ball pad having a fourth  
diameter greater than the third diameter, each of the first solder ball pads  
and the second solder ball pad being connected to a solder ball that is  
connected to a printed circuit board.

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Claim 18 (original): The solder pads of claim 17 wherein the substrate  
comprises a plastic substrate.

Claim 19 (original): The solder pads of claim 17 wherein the substrate  
25 comprises a ceramic substrate.

Claim 20 (currently amended): The solder pads of claim 17 wherein the  
first ~~predetermined~~ corner region and the second ~~predetermined~~ corner  
region comprise a high stress region.

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Claim 21 (currently amended): The solder pads of claim 17 wherein the portions of the first solder bump pads [[are]] arranged in a matrix at a center region of the substrate out of the first rectangular array are aligned  
5 to the second solder bump pad on the first corner region.

Claims 22-27 (canceled)

Claim 28 (currently amended): The solder pads of claim 17 wherein the portions of the first solder ball pads [[are]] arranged in a matrix at a center region of the substrate out of the second rectangular array are  
10 aligned to the second solder ball pad on the second corner region.

Claims 29-37 (canceled)

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